

What is claimed is:

- 1 1. An inductive device with superior power handing capacity, comprising:
  - 2 an inductive device housing with a coolant inlet port and a coolant outlet port;
  - 3 an inductive device core;
  - 4 at least one multi-layer winding wound around the core that has a central section about
  - 5 which a portion of all the layers are interspersed so that they form a gap in the outer
  - 6 layer or layers of each multi-layer winding; and
  - 7 a flow diverter that directs coolant flow from the inlet port through the central section of
  - 8 each multi-layer winding.
- 1 2. The inductive device of Claim 1, wherein the flow divider seats the core and each
- 2 multi-layer winding in place within the housing.
- 1 3. The inductive device of Claim 2, wherein the flow divider includes a plurality of
- 2 holes through which coolant from the inlet port sprays the central section of each multi-
- 3 layer winding.
- 1 4. The inductive device of Claim 3, wherein the flow divider has an inlet channel that
- 2 couples the holes to the inlet port.
- 1 5. The inductive device of Claim 4, wherein the flow divider has a ramp that interfaces
- 2 the inlet port with the inlet channel.
- 1 6. The inductive device of Claim 5, wherein the flow divider has an outlet channel that
- 2 couples coolant circulating around the core and each multi-layer winding with the outlet
- 3 port.
- 1 7. The inductive device of Claim 6, wherein each multi-layer winding has an inner
- 2 layer and an outer layer.

1 8. The inductive device of Claim 7, wherein two multi-layer windings are wound  
2 around the core.

1 9. The inductive device of Claim 6, wherein the outlet channel comprises a flat cut  
2 into the side of the flow divider and the housing includes an interior locating tab that  
3 mates with the flat and keeps the flow diverter, core and each multi-layer winding in  
4 alignment within the housing.

1 10. The inductive device of Claim 9, wherein each multi-layer winding has an inner  
2 layer and an outer layer.

1 11. The inductive device of Claim 10, wherein two multi-layer windings are wound  
2 around the core.

1 12. An inductive device with superior power handing capacity, comprising:

2 an inductive device housing with a coolant inlet port and a coolant outlet port;

3 an inductive device core;

4 at least one multi-layer winding wound around the core that has a central section about  
5 which a portion of all the layers are interspersed so that they form a gap in the outer  
6 layer or layers of each multi-layer winding; and

7 a flow diverter that directs coolant flow from the inlet port through the central section of  
8 each multi-layer winding that comprises a plurality of holes through which coolant from  
9 the inlet port sprays the central section of each multi-layer winding, an inlet channel that  
10 couples the holes to the port and an outlet channel that couples coolant circulating  
11 around the core and each multi-layer winding with the outlet port.

1 13. The inductive device of Claim 12, wherein the flow divider has a ramp that  
2 interfaces the inlet port with the inlet channel.

1 14. The inductive device of Claim 13, wherein the outlet channel comprises a flat cut  
2 into the side of the flow divider and the housing includes an interior locating tab that

3 mates with the flat and keeps the flow diverter, core and each multi-layer winding in  
4 alignment within the housing.

1 15. The inductive device of Claim 14, wherein each multi-layer winding has an inner  
2 layer and an outer layer.

1 16. The inductive device of Claim 15, wherein two multi-layer windings are wound  
2 around the core.

1 17. An inductive device with superior power handing capacity, comprising:

2 an inductive device housing with a coolant inlet port and a coolant outlet port;

3 an inductive device core;

4 at least one winding with an inner layer and an outer layer wound around the core that

5 has a central section about which a portion of the inner and outer layers are

6 interspersed so that they form a gap in the outer layer of each multi-layer winding; and

7 a flow diverter that directs coolant flow from the inlet port through the central section of

8 each multi-layer winding that comprises a plurality of holes through which coolant from

9 the inlet port sprays the central section of each multi-layer winding, an inlet channel that

10 couples the holes to the port and an outlet channel that couples coolant circulating

11 around the core and each multi-layer winding with the outlet port.

1 18. The inductive device of Claim 17, wherein the flow divider has a ramp that

2 interfaces the inlet port with the inlet channel.

1 19. The inductive device of Claim 18, wherein the outlet channel comprises a flat cut

2 into the side of the flow divider and the housing includes an interior locating tab that

3 mates with the flat and keeps the flow diverter, core and each multi-layer winding in

4 alignment within the housing.